

New technologies for e-commerce

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Abstract

Today electronic commerce (e-commerce) has changed the way of doing business, and contributes significantly to economic activity. In any case, e-commerce is not a static field but it is always evolving in order to support new and more complex real world processes. The agriculture sector is expected to undergo significant transformation as a result of new business models being adopted through ecommerce. Examples of the adoption of new technologies in agriculture are provided with a view to demonstrating the benefits that can be achieved. The first part I expound the basics of e-commerce and e-markets. After I describe potential benefits to agriculture from adoption of e-commerce. The last part I describe the ecommerce 2.0, what is a prospect evolution of e-commerce.

Key words

e-Business, e-Agribusiness, e-Market, Internet

Introduction

E-commerce is leading to new ways of doing business and new products and services. It is increasing the efficiency of business operations and improving the global reach and competitiveness of businesses. The agriculture sector is expected to undergo significant transformation as a result of new business models being adopted through ecommerce. Examples of the adoption of new technologies in agriculture are provided with a view to demonstrating the benefits that can be achieved. The impacts of ecommerce are expected to vary on a regional basis depending on the industry structure of regions.

1. Advantages to use e-marketplaces

E-markets can be very valuable to some companies. They play an important role and add considerable value in many industries and regions. To other companies, in other industries or geographical areas, e-markets are less useful.

The buyer's perspective:

- searching for new suppliers
- posting your buying requests
- searching for new or used investment goods

The seller's perspective:

- finding new leads
- offering new and used products for sale
- searching through tender databases
- getting market information about the competition

Success factors in e-commerce

1.1. Technical and organizational aspects

In many cases, an e-commerce company will survive not only based on its product, but by having a competent management team, good post-sales services, well-organized business structure, network infrastructure and a secured, well-designed website. Such factors include:

- Sufficient work done in market research and analysis. E-commerce is not exempt from good business planning and the fundamental laws of supply and demand. Business failure is as much a reality in e-commerce as in any other form of business.
- A good management team armed with good and sound information technology strategy. A company's IT strategy should be a part of the business re-design process.
- Providing an easy and secured way for customers to effect transactions. Credit cards are the most popular means of sending payments on the internet, accounting for 90% of online purchases. In the past, card numbers were transferred securely between the customer and merchant through independent payment gateways. Such independent payment gateways are still used by most small and home businesses. Most merchants today process credit card transactions on site through arrangements made with commercial banks or credit cards companies.
- Providing reliability and security. Parallel servers, hardware redundancy, fail-safe technology, information encryption, and firewalls can enhance this requirement.
- Providing a 360-degree view of the customer relationship, defined as ensuring that all employees, suppliers, and partners have a complete view, and the same view, of the customer. However, customers may not appreciate the big brother experience.
- Constructing a commercially sound business model. If this key success factor had appeared in textbooks in 2000, many of the dot-coms might not have gone into bankruptcy.
- Engineering an electronic value chain in which one focuses on a "limited" number of core competencies -- the opposite of a one-stop shop. (Electronic stores can appear either specialist or generalist if properly programmed.)
- Operating on or near the cutting edge of technology and staying there as technology changes (but remembering that the fundamentals of commerce remain indifferent to technology).
- Setting up an organization of sufficient alertness and agility to respond quickly to any changes in the economic, social and physical environment.
- Providing an attractive website. The tasteful use of colour, graphics, animation, photographs, fonts, and white-space percentage may aid success in this respect.

- Streamlining business processes, possibly through re-engineering and information technologies.
- Providing complete understanding of the products or services offered, which not only includes complete product information, but also sound advisors and selectors.

Naturally, the e-commerce vendor must also perform such mundane tasks as being truthful about its product and its availability, shipping reliably, and handling complaints promptly and effectively. A unique property of the Internet environment is that individual customers have access to far more information about the seller than they would find in a brick-and-mortar situation.

1.2. Customer-Oriented

A successful e-commerce organization must also provide an enjoyable and rewarding experience to its customers. Many factors go into making this possible. Such factors include:

- Providing value to customers. Vendors can achieve this by offering a product or product-line that attracts potential customers at a competitive price, as in non-electronic commerce.
- Providing service and performance. Offering a responsive, user-friendly purchasing experience, just like a flesh-and-blood retailer, may go some way to achieving these goals.
- Providing an incentive for customers to buy and to return. Sales promotions to this end can involve coupons, special offers, and discounts. Cross-linked websites and advertising affiliate programs can also help.
- Providing personal attention. Personalized web sites, purchase suggestions, and personalized special offers may go some of the way to substituting for the face-to-face human interaction found at a traditional point of sale.
- Providing a sense of community. Chat rooms, discussion boards, soliciting customer input and loyalty programs (sometimes called affinity programs) can help in this respect.
- Owning the customer's total experience. E-tailers foster this by treating any contacts with a customer as part of a total experience, an experience that becomes synonymous with the brand.
- Letting customers help themselves. Provision of a self-serve site, easy to use without assistance, can help in this respect. This implies that all product information is available, cross-sell information, advice for product alternatives, and supplies & accessory selectors.
- Helping customers do their job of consuming. E-tailers and online shopping directories can provide such help through ample comparative information and good search facilities. Provision of component information and safety-and-health comments may assist e-tailers to define the customers' job.

E-Market types

1.3. Auctions

In an auction, a specific product or a specific quantity of products is being placed for sale. The auction starts and ends at a pre-set time. Buyers can then submit bids during that period of time. Auctions help sellers get the right price for products ranging from fish and flowers to chemicals and patents. Auctions can also be used to get rid of surplus assets and offer buyers the opportunity to find a bargain. Sometimes they are a combination of online and offline auctions, where traditional auction houses also make their auctions available online, either by themselves or in cooperation with Internet platforms. Most of these services are more than just a B2B Internet platform. They should rather be regarded as auction full service providers.

1.4. Catalogue

A list of products and services offered by the sellers. Some catalogues list product information on a general level, others are very detailed. Some are quite informative while others are more promotional. Some carry pictures and others do not. Catalogues facilitate the search for products and suppliers in industries with a wide range of products and producers. Prices published in a catalogue are generally fixed and often not disclosed to customers prior to registration since different buyers might have agreed on different prices.

1.5. Classified ads

Classified ads display offers of specific products for sale or wanted by a buyer. The ads are sorted by the type of product, brand or company. They very much resemble the “for sale” sections in newspapers or trade magazines and are often focused on an industry or a certain range of products. This function can also be called a bulletin board, where buyers and sellers post things they would like to buy or sell.

1.6. Online order

When an order can be placed online for the articles listed for sale in a catalogue or classified ad. Orders to various sellers can in this way be placed directly on an e-marketplace.

1.7. Reverse auctions

Also called sourcing auctions or buyers’ auctions, help buyers to find the cheapest supplier for a contract. Within the auction the potential suppliers submit offers, lowering the selling price for each submitted bid. They underbid each other until the supplier with the lowest bid wins the contract. Reverse auctions often take place on dedicated Internet platforms, but they can also be found as part of larger B2B Internet platforms or as an element within enterprise software for supply management.

1.8. Request for Quotation/Proposal/Bid (RFQ, RFP, RFB)

Usually an on-line form where the seller or buyer sends a request to sell or buy a product. The RFQ/RFP/RFB function can be used to request a price or proposal on a product in a classified ad, a product listed in a catalogue or products expected to be supplied by a company in a supplier directory. The request is then typically sent to the trading partners by email to be answered.

1.9. Supplier directories

Supplier directories are databases of companies. Buyers can find new suppliers and suppliers can get leads. You can search by products or services, by region or by company. The benefit for buyers is a clearer view of potential suppliers for industries and regions they are not familiar with. Directories typically include a brief description of the product area of the company and contact details.

1.10. System integration

A further step is if the e-marketplace offers companies (buyers and / or sellers) the ability to integrate the order process with their Enterprise Resource Planning (ERP) systems (from companies like IFS, SAP, Intenia, Baan, and IBS). Internet platforms with such system integration are sometimes called trading networks.

They are part of the e-business infrastructure of companies with the main purpose of enabling an electronic information flow without interruptions. They are not for finding new suppliers or customers but rather for making transactions and the flow of information efficient within existing trade relationships.

Potential benefits to agriculture from adoption of e-commerce

Many types of business operations can be enhanced through the application of e-commerce. Activities along the supply chain such as procurement of a business's inputs and selling its output can be made more efficient with online trading. The internal processes of a business can be re-engineered to bring productivity improvements. These types of business operations are similar regardless of the industry in which a business operates. So there is good reason why most industries can gain some benefit from increased use of e-commerce. While the extent of these gains may vary from industry to industry, it is clear that agriculture can benefit from e-commerce in similar ways as other industries. As well as the more common business processes that are amenable to e-commerce, the agriculture sector has additional characteristics that provide a further indication that the sector would benefit from increased adoption of e-commerce:

- it is reliant on accurate and timely information, e.g. weather reports, stock information and prices;
- there are large distances between producers and customers.
- The agriculture sector can gain from the use of e-commerce in many ways:
 - more efficient process for procurement of inputs through ordering and payment online;
 - better information on availability and price of inputs resulting in better prices;
 - removal of intermediaries thereby reducing transport requirements and resulting in less
 - adverse consequences for product quality;
 - cost reduction through online marketing and selling products; and
 - increased access to markets.

WEB 2.0

Web 2.0 is an idea, rather than a specification, platform or technology.

The concept of "Web 2.0" is pure marketing. It was created by O'Reilly Publishing and MediaLive International when they were brainstorming conference ideas. They wanted to capture the idea that, far from having "crashed", the web was more important than ever, with exciting new applications and sites popping up regularly.

A Web 2.0 website may typically feature a number of the following techniques:

- Rich Internet application techniques, optionally Ajax-based
- CSS
- Semantically valid XHTML markup and the use of Microformats
- Syndication and aggregation of data in RSS/Atom
- Clean and meaningful URLs
- Extensive use of folksonomies (in the form of tags or tagclouds, for example)
- Use of wiki software either completely or partially (where partial use may grow to become the complete platform for the site)
- Weblog publishing
- Mashups
- REST or XML Webservice APIs

The six main themes covering design in the Web 2.0 world:

- Writing semantic markup (transition to XML)
- Providing Web services (moving away from place)
- Remixing content (about when and what, not who or why)
- Emergent navigation and relevance (users are in control)
- Adding metadata over time (communities building social information)
- Shift to programming (separation of structure and style)

TREND: E-Commerce 2.0

E-Commerce 2.0 drivers, the trends that define the transition and the architectures and technologies that enable it.

What drives the change? For starters, maturity and perspective. E-commerce has been around for over a decade now. Online retail spending will near \$100B in 2006 with close to 20% Y/Y growth. The Internet influences an increasing portion of total retail sales. Jupiter Research predicts the number to go from 27% in 2005 to over 50% in 2010. E-commerce has become strategic.

Another driver is entropy. Many of the largest etailers are running systems that are 6-8 years old, built by long-gone bubble-time integrators on top of highly customized e-commerce

platform infrastructure. Brand managers and merchandisers have to talk to IT to get things done. Everything takes too long because IT is understaffed and they often care more about running a site well than about the site making lots of money. These are some of the factors that make Forrester predict a major re-platforming of e-commerce sites, starting this year.

Online consumer behaviors have also changed. Trust in online shopping and payment mechanisms has increased. Consumers are buying more online and they are buying more complex products as well. On the flip side, they are becoming pickier. A survey by Allurent found that when consumers are faced with a frustrating experience, 82% are less likely to return to the site, 55% form a negative impression of the retailer and 28% are less likely to shop at the retailer's physical store.

The broadband penetration has gotten to a point where etailers can safely start downplaying dial-up traffic and experimenting with richer content and experiences.

I see three big trends framing the evolution of E-Commerce 2.0 and helping address the challenges of finding shoppers, turning them into buyers and collecting payment.

- **TREND 1: Rich Internet Apps Are On the Rise**

First, expect a significant move to more interactive user experiences delivered through rich Internet applications.

- **TREND2: Disaggregation is Accelerating**

The second trend is accelerating disaggregation, brought about by the dual forces of focusing on core competencies and leveraging network effects.

- **TREND3 : "Social Commerce" is Emerging Fast**

The third trend is social commerce, which comes in two flavors: content-driven and interaction-driven, or passive vs. active.

- **E-Commerce 2.0: Architecture**

There are three architecture elements that define E-Commerce 2.0 sites and help break the virtual store (everything under the same roof) mentality:

- A composite front end that integrates disaggregated services into a coherent, fluid user experience. How is this different from a portal? In a portal, the various pieces of content are often independent of one another. Here, everything is highly integrated from a data and user experience standpoint. The front end will initially run in parallel to the existing e-commerce 1.0 site because etailers will experiment and make the switch to e-commerce 2.0 gradually. Pieces of the front end will be embeddable in other sites.
- A backend suite with three main purposes: (1) tying into existing e-commerce functionality that doesn't need to be replaced such as the catalog, order processing and customer service, (2) creating an intermediate data layer optimized to support the user experience and (3) maintaining interaction state, a task which becomes a lot more complicated with disaggregation.
- A sophisticated battery of tools for brand managers, merchandisers and analysts that takes IT out of the equation. Control of content, promotions, design, layout, interactivity and analytics should be firmly in the hands of business users and the creative types. IT should worry about scalability, reliability and security.

Great E-Commerce 2.0 sites leverage a multitude of technologies, many of which are unfamiliar to E-Commerce 1.0 developers. Rich interactivity requires some combination of

Flash and AJAX. Going from simple mashups to flexible composite front ends becomes easier with advanced platforms such as Flex and Atlas from Adobe and Microsoft. Audio and video usage will increase, bringing new tools and servers into the mix. Looking at the work of companies such as Kaon Interactive, I even expect 3D to get a second chance in certain verticals. Core Web services protocols enable disaggregation with a special role for Atom/RSS in dynamic syndication.

Social commerce brings in the rest of the Web 2.0 compendium such as user-generated content (some of it pulled from blogs and wikis, the rest captured on e-commerce sites), trust/reputation building and information discovery and management through folksonomies and social networks. Of course, all of this has to be tightly integrated with both horizontal and vertical search, which is no small task. Backend innovations will target complex product configuration (often an information architecture problem more than a presentation problem), navigation path optimization and new kinds of personalization. Agile response to user behavior requires integrating real-time business intelligence with traffic flow modeling.

That's a lot of technologies to wrap in a solution bundle. It begs the question about what will the e-commerce platform vendors do. Existing e-commerce platforms are too tied to HTML on the presentation side and lack sophisticated data processing and state management capabilities. Incumbent e-commerce vendors' attempts to make an evolutionary transition to E-Commerce 2.0 will fail until they commit to significant re-architecture. This creates an opportunity for three kinds of players:

- system integrators who move quickly to assemble necessary pieces into solutions
- a new generation of e-commerce platform companies such as
- the network-wide service providers such as ARPU, Google, BazaarVoice and PowerReviews.

Conclusion

The benefits achieved are not about cutting out the middle-man because it won't demolish relationships and it won't upset protocol. It's about making trade faster, cheaper and more accessible. The Internet is a tool for conducting business and should be viewed as just one of many in the marketing function. The benefits should not just be viewed in terms of profits either. E-commerce enables business to trade from any location in EU, meaning that head-office operations can be based in any region as the communications infrastructure is rolled-out further. As a result of these advancements, Internet access is no longer financially out of reach. As availability increases, the cost decreases, making it a viable communication and marketing option for isolated businesses. Finally, these benefits can be magnified if applied to the cooperative producer groups that are becoming more commonplace in EU. E-commerce becomes an even more cost-effective marketing tool through the economies of scale from regional promotion. E-commerce can also assist in the supply chain management of cooperative partners.

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